

Attorney Dkt: 839-377
Runkle, Mark A. et al.
Serial No.: unknown (FWC of SN 08/550,941)
Group Art Unit: 2111

1. {ONCE AMENDED} An electrical interconnection system
comprising:

a rotary transformer for coupling to a first electrical
system and to a second electrical system, the rotary transformer
comprising:

a rotor connected to the first electrical system;

a stator connected to the second electrical

system;

a controller which adjusts an angular position of the
rotary transformer, the controller comprising:

a first control unit which compares an input order
power signal P_o to a measured power signal P_i being transferred
between the first electrical system and the second electrical
system to generate a requested angular velocity signal ω_o ;

a second control unit which compares the requested
angular velocity signal ω_o to a measured angular velocity signal
 ω_r of the rotary transformer to generate a drive signal T_o .

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8. 1. {ONCE AMENDED} [The system of claim 6,] An electrical
interconnection system comprising:

a rotary transformer for coupling to a first electrical
system and to a second electrical system, the rotary transformer
comprising:

a rotor connected to the first electrical system;

a stator connected to the second electrical
system;

a controller which adjusts an angular position of the
rotary transformer;

a torque control unit for rotating the rotor, wherein
the torque control unit is a motor; [,] and [further comprising]

a gear for interfacing the motor with the rotor.

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10.
11. {ONCE AMENDED} [The system of claim 6,] An electrical interconnection system comprising:

a rotary transformer for coupling to a first electrical system and to a second electrical system, the rotary transformer comprising:

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a rotor connected to the first electrical system;

a stator connected to the second electrical system;

a controller which adjusts an angular position of the rotary transformer;

a torque control unit for rotating the rotor, wherein the torque control unit is integrated with the stator and the rotor.

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15. {ONCE AMENDED} A substation for electrically interconnecting a first electrical system and to a second electrical system, the first electrical system and the second electrical system having a differing electrical characteristic, the substation comprising:

C5

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a step-down transformer coupled to the first electrical system;

a step-up transformer coupled to the second electrical system;

a rotary transformer coupled to the step-down transformer and to the step-up transformer, the rotary transformer comprising:

C5 a rotor connected to a first of the step-down and step-up transformers;

a stator connected to a second of the step-down and step-up transformers;

a controller which adjusts an angular position of the rotary transformer so that a predetermined power is transferred from the first electrical system to the second electrical system, the controller comprising:

a first control unit which compares an input order power signal P_o to a measured power signal P_i being transferred between the first electrical system and the second electrical system to generate a requested angular velocity signal ω_o ;

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C5
Concl'd
a second control unit which compares the requested
angular velocity signal ω_o to a measured angular velocity signal
 ω_r of the rotary transformer to generate a drive signal T_o .

19. {ONCE AMENDED} [The system of claim 17,] A substation for
electrically interconnecting a first electrical system and to a
second electrical system, the first electrical system and the
second electrical system having a differing electrical
characteristic, the substation comprising:

C6
a step-down transformer coupled to the first electrical
system;

a step-up transformer coupled to the second electrical
system;

a rotary transformer coupled to the step-down
transformer and to the step-up transformer, the rotary
transformer comprising:

a rotor connected to a first of the step-down and
step-up transformers;

a stator connected to a second of the step-down
and step-up transformers;

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C6
a controller which adjusts an angular position of the
rotary transformer so that a predetermined power is transferred
from the first electrical system to the second electrical system;

Concl'd
a torque control unit for rotating the rotor, wherein
the torque control unit is integrated with the stator and the
rotor.

25. 2/. {ONCE AMENDED} A method of interconnecting two electrical
systems, the method comprising:

C7
coupling a rotor of a rotary transformer to a first
electrical system and a stator of the rotary transformer to a
second electrical system;

adjusting an angular position of the rotary transformer
so that a predetermined power is transferred from the first
electrical system to the second electrical system, the adjusting
being performed by a closed loop angular positioning control
system which operates the rotary transformer for transferring
power from the first electrical system to the second electrical
system.
